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Positive correlation between *weight-gain and backfat thickness* (average of 6 measurements) of average significancy ($P < 0.01$) was observed only in pigs raised in different feeding conditions and in those fed ad libitum ($r = 0.387^{***}$). No relationship was observed between the above-mentioned two traits in case of the pigs fed similar and rationed diets ($r = 0.018$), as overfeeding, i.e. the overweight possibility was excluded. Consequently the backfat thickness of a live pig must be determined using a probe meter to select a proper animal for breeding purposes.

There was no statistically significant correlation observed between *weight-gain and carcass length* both in ad libitum ($r = -0.073$) and rationed ($r = 0.068$) feeding. Carcass length is a strongly inheritable trait which is not affected by feeding.

Weight-gain and loin eye area (area of musculus longissimus dorsi) are not in statistically significant correlation ($r = 0.174$) with weight-gain in pigs fed balanced protein rations. It is caused by the fact that meatiness is also a strongly inherited trait. Thus, meatiness (ratio of meat tissue in a carcass) will also be determined by a meter in a live pig.

Effect of the breed of the boar on fertility and milk yield of Estonian Large White and Estonian Landrace sows

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Introduction

The use of crossbreeding by commercial swine producers is a well-accepted tool to enhance productivity through the exploitation of heterosis and breed differences. The number of pigs normally weaned per litter is of great economical importance in commercial pig production. The ultimate object is to obtain at least 22-24 viable piglets per sow per year. In a farrowing there is necessary to obtain 11-12 piglets per sow, with birth weight 1.4 kg, from which to rearing will stay ten piglets with weight no less than 8 kg (*Eilart*, 1994).

Although heritability of the litter size is low, the coefficient of phenotypic variation is relatively high (around 0.25), indicating the presence of ample

genetic variation on which to select (*Webb*, 1994).

The purpose of this study was to ascertain the effect of the breed of the boar on fertility and milk yield of sows.

Materials and Methods

These studies were carried out with two postgraduate students from department of Animal Husbandry with the advice of the Prof. *O.Saveli*.

A. Tänavots observed Estonian Large White (ELW) pure-bred sows (54) and crossbred ELW sows (21) mated with Estonian Landrace (EL) boars. *R.Mölder* scanned pure-bred EL sows and crossbred EL sows mated with ELW and FL boars.

Results

Effect of the breed of the boar fertility and milk yield of ELW sows is given in the Table1. It is noticeable, that most traits of cross-breeds are higher than those of the pure-breeds, except litter birth weight and piglet's birth weight. It is easily explained, as the large quantity of the piglets on birth is one of the reasons of low birth weight (r = -0.26), which cause in this way a low birth weight of litter (*Tänavots*, 1995). Crossbreeding exerted substantial effect upon the number of piglets in the litter (+0.76 piglets at birth and +1.03 piglets at weaning) and vitality of the piglets was better (+4%). Also there is rather large effect on growth rate of the piglets (milk yield +2.59 kg and litter weight at weaning +37.54 kg). This trait is important economically, because in same feeding level would be attained larger growth rate during the fattening.

Crossing combinations between Estonian swine breeds did not give substantial difference in any traits (Table 2). Crossbreeding litters lost to the EL litters both in offspring and weaning weight. Heterosis can be trusted in growth and number of piglets, in consequence of what additional reasons must be explained.

FL boars added 0.35 piglets per litter compared with EL×FL and 0.58 piglets, compared with combination EL×ELW. Vitality was in all schemes similar.

Summary

Whereas Estonian pig breeds (ELW and EL) are bred with similar performance traits, then particular heterosis effect about fertility was not considered. Some success about growth rate and viability was attained. Therefore, observing economical profits, it would be necessary to use for swine production the crossing of different swine breeds.

Table 1. Fertility and milk yield of the ELW sows

Traits	Boar breed				Difference
	ELW		EL		
	$\bar{x}$	s	$\bar{x}$	s	
No. of sows	54	-	21	-	-
No. of boars	9	-	5	-	-
Litter No.	3.17	1.67	3.35	1.95	+0.18*
Piglets born alive	11.39	3.34	12.15	3.05	+0.76
Litter weight at birth	14.74	3.77	14.67	3.66	-0.07
Piglet birth weight (kg)	1.28	0.16	1.22	0.11	-0.06*
Litter size at 21 days	9.85	2.94	10.85	2.58	+1.00
Milk yield (kg)	57.13	13.72	59.72	8.03	+2.59
Litter size at 2 months	9.5	2.69	10.53	2.15	+1.03
Litter weight at 2 months (kg)	163.06	47.58	200.6	34.53	+37.54**
Surviving (%)	83	-	87	-	+4

Table 2. Fertility and milk yield of the EL sows

Traits	Boar breed			Difference	
	EL	ELW	FY	ELW-EL	FY-EL
No. of sows	28	20	23	-	-
No. of boars	13	9	11	-	-
Litters No.	32	22	30	-	-
Piglets born alive	329	221	319	-	-
Average litter size	10.28	10.05	10.63	-0.23	+0.35
Average litter weight (kg)	15.4	14.2	16.5	-1.2	+1.1
Average piglet weight (kg)	1.52	1.42	1.57	-0.1	+0.05
Litter size at 21 days	9.41	9.32	9.8	-0.09	+0.39
Milk yield (kg)	54.4	49.8	52.8	-4.6	-1.6
Piglet weight at 21 days (kg)	5.64	5.3	5.21	-0.34	-0.43
Surviving (%)	91.5	92.7	92.2	+1.2	+0.7

In crossing the ELW sows with EL boars a considerable success was achieved, in the sows of EL some success was attained only with FL.

In future the already started import of the breeding material from the developed swine production countries should be carried on, paying more attention to the dark breeds to improve the fattening and performance qualities of swine.

Literature

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Improvement of meat productivity of pigs by direct selection of basis genetic breeding value

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1. Estimation of genetic breeding value

For estimation of genetic breeding value of pigs, data of the performance and descents of the animal itself, it's parents, sibs or halfsibs and progeny is used. All animals, being connected by origin and data in the data bank, get the estimation of genetic breeding value by using BLUP- method. The heritability coeffcient used in the following calculations is taken from specialist literature. Data of performance and decent of 168 Estonian Becon from Kehtna Progeny Testing Station is used. Pigs come from 7 different breeding farm.

Sonic lean meat meter Piglog-105 was used to test the content of lean meat as an estimation of production. Age at the moment of measuring was also taken into consideration. The data was saved as an EXEL file and processed as a FOX - PRO data base file. A twelve-point pig code was used to show descent and prevent recurrence. Further processing of data was carried out with the help of statistical analysis program SAS.

Productivity and the content of lean meat were first calculated as absolute breeding value and secondly as relative breeding value. Relative breed-